DATA MODUL
DISPLAYS AND EMBEDDED SOLUTIONS

User Manual

Mini-ITX eDM-A55E
AMD G-Series Fusion Processor
with AMD A55E Fusion Controller Hub

DATA MODUL AG | Landsberger Str. 322 | 80687 Munich | Tel. +49-89-56017-0 | Fax +49-89-56017-119 | www.data-modul.com

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General instructions

Using this manual

- Please read this user manual before installing and using this motherboard.
- This user manual contains information about the hardware, software, and configuration of the motherboard
- Awareness of the safety instructions and instructions for use in this manual will ensure the safe and correct use of the motherboard.
- In addition to the information given here, you should comply with the local regulations for the prevention of accidents and generally applicable safety regulations.

Danger symbols and levels

In this User manual, symbols are used to highlight important safety instructions and any advice relating to the device. The instructions should be followed very carefully to avoid any risk of accident, personal injury or property damage.

Danger symbols

	Dangerous Voltage, Electric shock
	Hazard point

Danger levels

DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates a property damage message.

General symbols

Notes that are marked with these symbols contain important or useful information.

	Additional support or useful information.
	The crossed-out refuse bin indicates that the products must be properly recycled or disposed of appropriately in accordance with national legislation in the respective EU countries. If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.

Technical Support

Data Modul's technicians and engineers are committed to providing the best possible technical support for our customers so that our products can be easily used and implemented. We request that you first visit our website at www.data-modul.com for the latest documentation, utilities and drivers, which have been made available to assist you. If you still require assistance after visiting our website then contact our technical support department by email at support@data-modul.com.

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Safety Instructions

Please read and observe the following safety precautions thoroughly in order to prevent or reduce injuries to persons or damage to objects. Please observe all safety instructions and warnings on the device and in operating manual. Please keep this operating manual for future reference.

DANGER!

- The motherboard may only be installed or used under the conditions that lie within the specified tolerance - see chapter “Specifications”.
  In case of failure to comply with the specified conditions which may cause fire, dangerous electric shock, or damage of the motherboard.
- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices can interrupt the grounding circuit.
- Make sure, that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- f the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.
- Before using the product, make sure, that all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- Don’t use metallic components, like paper clips, screws and similar, near the motherboard, when this is supplied, to avoid short circuits due to unwanted contacts with other components of the motherboard.
- Never connect the motherboard to an external power supply unit or battery, if the board has become wet.
- Place the motherboard on a stable and ESD (Electrostatic discharge) protected surface.
  Please assure ESD compliant handling of the motherboard when unpacking and connecting peripherals.
- If you encounter technical problems with the motherboard, contact a qualified service technician or your retailer.

Conformity

This unit is a Mini-ITX motherboard and complies with the following directives of the European Union:

- 2011/65/EU (of 8. June 2011 directive of the european parliament and of the council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS))
- 2002/96/EC (of 27. January 2003 directive of the european parliament and of the council on waste electrical and electronic equipment (WEEE)).

The manufacturer cannot be held liable for operation outside of the operating conditions described in these operating instructions. Moreover, your product liability and warranty rights shall lapse as a result of this.

Disposal and recycling

This unit has been produced largely from materials that can be disposed of in an environmentally friendly manner and that can be properly recycled. After use the unit will be taken back for reuse or recycling, provided that it is handed back in a condition that corresponds with its use having been in compliance with the intended use. Any non-recyclable parts of the set will be disposed of in the proper manner.
All packaging materials can and should be recycled.

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Batteries

WARNING
Risk of explosion!

There is a potential risk of explosion due to improper replacement of the battery. The battery should only be replaced with the same or equivalent type of battery recommended by the manufacturer. Be sure to comply with your local laws and environmental regulations regarding the proper disposal of used batteries.

Do not expose the batteries to excessive heat, do not throw them into a fire, do not recharge them and do not attempt to open them; they could leak or even explode.

The motherboard contains a battery, which cannot be disposed with normal household waste.
When disposing of used battery, please comply with governmental regulations or environmental public instruction's rules that apply in your country / area.

Packing List

Before you begin installing your mainboard, please make sure, that the following materials have been delivered:

- 1 x eDM-A55E Mini ITX Motherboard
- 1 x I/O shield
- 1 x CPU cooler
  (for T40E, the passive heat-sink is already mounted on the board)
- 1 x SATA cable
- 1 x SATA power cord
- 1 x Quad-COM cable.

If any of the above items is damaged or missing, please contact DATA MODUL.

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Specifications

System	
APU Type	AMD G-Series T56N 1.6GHz / T40E 1.0GHz
L2 Cache	L1: 32KB+32KB per core, L2: 512KB cache per core
Chipset	AMD A55E Controller Hub
Power Management	C6 supported
CPU Process	40 nm
BIOS	AMI Aptio EFI 16Mb SPI

Memory	
Memory Socket	One DDR3 SODIMM 204pin up to 1333 MHz
Max. Capacity	4 GB

Graphics	
Controller	AMD Radeon HD 6250 (T40E) AMD Radeon HD 6320 (T56N)
HW decoder / 3D Feature	DirectX 11, OpenGL4.0, dedicated HW(UVD3.0) for H.264, VC-1, MPEG-2, DivX decode
Display Memory	HW decoder / 3D Feature
VGA	T56N supports up to 2560 x 1600 T40E supports up to 1920 x 1200
LVDS	LVDS1: Dual Channel 24bit LVDS up to 1920x1200 LVDS2: Dual Channel 24bit LVDS up to 1920x1200
Dual Display	VGA + LVDS, LVDS1 + LVDS2
LVDS Backlight	Yes, PWM brightness control, up to 1A per LVDS output

Expansion Slot	
PCIe x4 gen2	1
Mini PCI Express	1

Mass-storage connectivity	
Serial ATA	4x SATA 6Gb/s
CFAST Socket	Yes (bottom side)

Ethernet	
Controller	2x RTL8111E Gigabit LAN
Features	Disable LAN through BIOS, WOL and Boot from LAN

Audio	
Codec	Realtek ALC892, 7.1 Channel HD Audio
SPDI/F	Yes
Amplifier	TI TPA3005, 2x 5 Watts

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External I/Os (within ATX Back Panel I/O window)	
Serial	2x RS-232 COM ports +5V/+12V power option on COM1
VGA	SUB-D 15
USB	4x USB 2.0
LAN	2x 10/100/1000 Base-T RJ-45
Audio	3x 3.5mm Jack (Mic-In/Line-Out/Line-In) stack

Internal I/Os	
Serial	4x RS-232 COM ports +5V/+12V power option on COM3
USB	4x USB 2.0
Digital I/O	8 General Purpose I/Os
SM-Bus / I^2C	Yes
LPC-Bus	Yes
Audio	Analog (2-ports) header SPDI/F header Amplified stereo header

BIOS (EFI)	
APCI	Version 3.0
Super I/O	Winbond W83627DHG-P
Fan control	1x CPU and 1x System fan control with SmartFAN III+
Watchdog Timer	P.O.S.T. Watchdog programmable 1 to 255 sec/min
RTC Battery	Socketed coin-cell RTC Battery, Type CR2032

Mechenical & Environmental	
Power Requirement	Single input: +12V DC / optional: +24V DC
Power Type	AT/ATX
Power Consumption	TBD
Operating Temperature	0 to 60°C
Storage Temperature	-40 to 80°C
Operating Humidity	RH 10 - 90% non-condensing
Vibration (non OP)	3.0 Grms, heat sink backplane TBD
Size	170 mm x 170 mm
Weight	TBD

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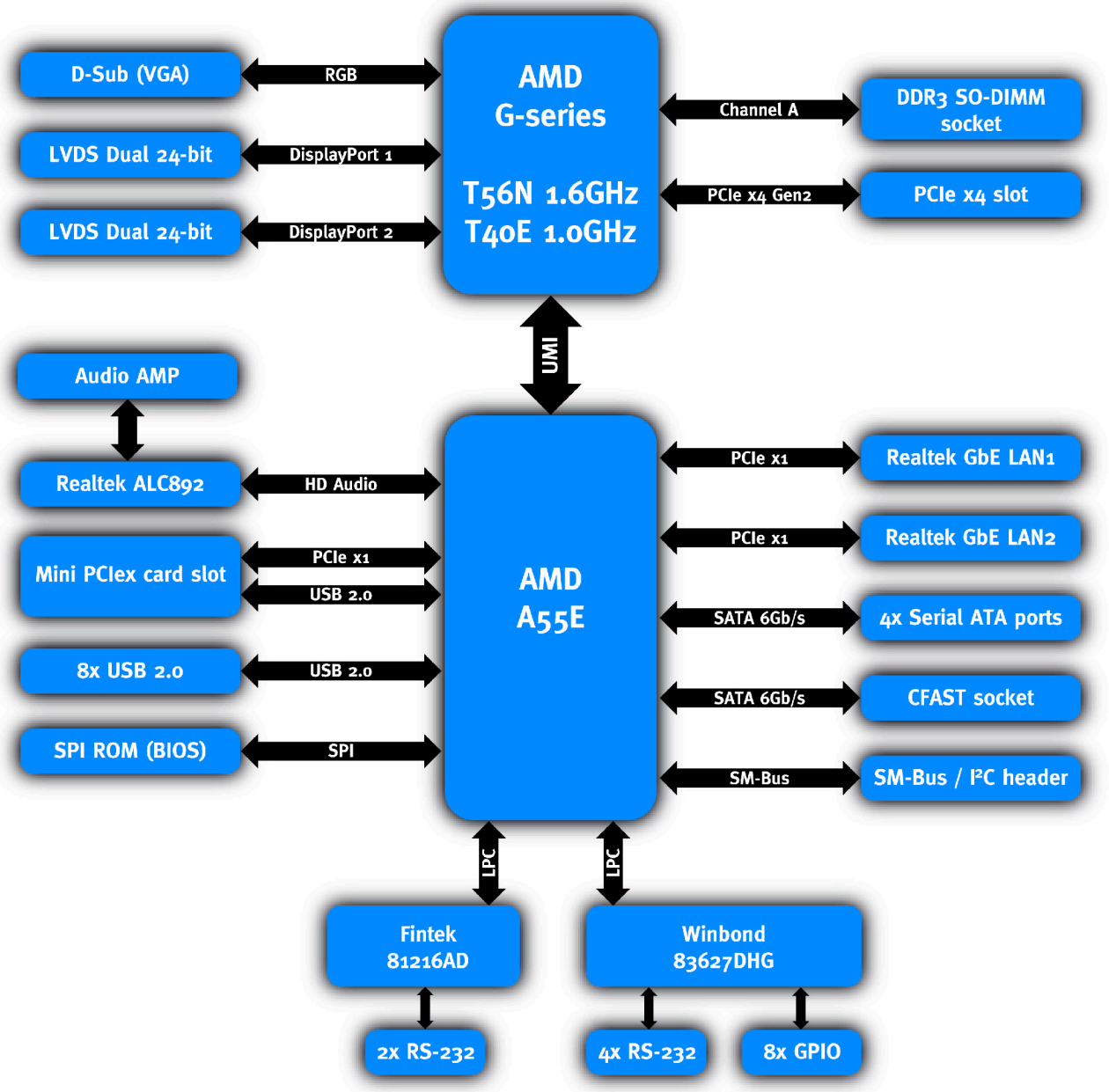
Block Diagram



Introduction

The eDM-A44E, a Mini-ITX board, supports AMD G-Series APU T40E/T56N. The motherboard integrates the Fusion Controller Hub A55E and delivers excellent system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions.

The AMD Embedded G-Series processors T40E/T56N with AMD Radeon™ HD 6320 graphics combine the central processing unit (CPU) with the graphics processing unit (GPU) in a single-chip Accelerated Processing Unit (APU) package.

Data Modul eDM-A55E features a rich I/O connectivity of 4 serial ports (COM), 8 USB 2.0, Dual GbE LAN and 4 SATA ports.

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First Steps

Take note of the following precautions before you install motherboard components or change any motherboard settings.

WARNING!

Unplug the power cord from the wall socket before touching any component.

Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.

Hold components by the edges to avoid touching the ICs on them.

Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.

Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

Motherboard Overview

Before you install the motherboard, study the configuration of your chassis to ensure, that the motherboard fits into it. Refer to the chassis documentation, before installing the motherboard.

CAUTION!

Make sure, that you unplug the power cord, before installing or removing the motherboard. Failure to do so may cause you physical injury and damage motherboard components.

Placement Direction

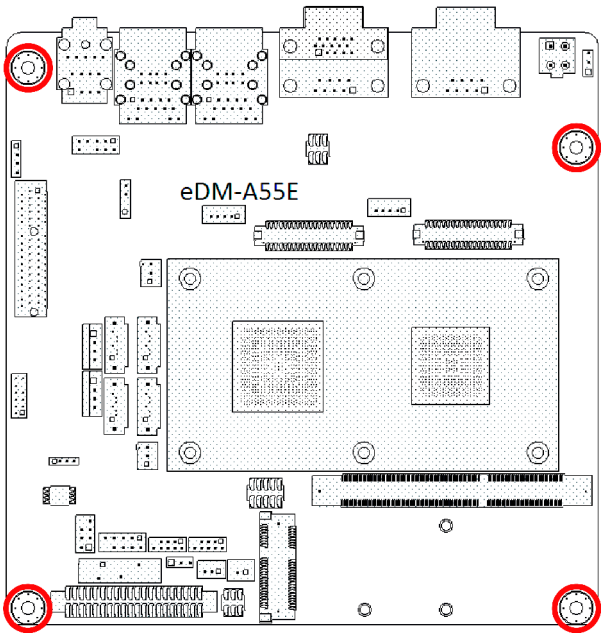
When installing the motherboard, make sure that you have place it into the correct chassis. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

Screw Holes

Place four (4) screws into the holes indicated by circles to secure the motherboard to the chassis.

NOTICE!

Do not over tighten the screws! Otherwise you can damage the motherboard.



Please this side towards the rear of the chassis.

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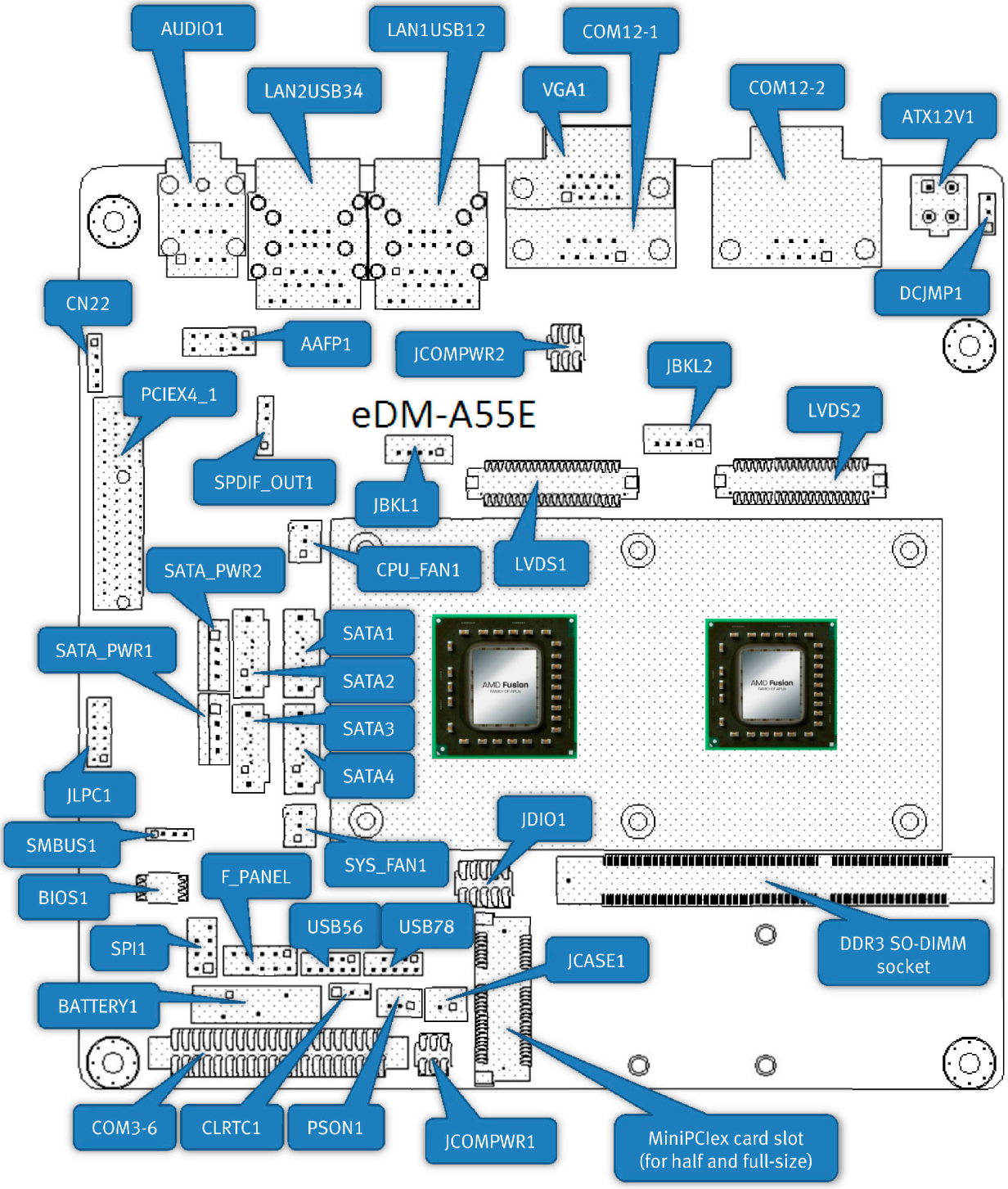
Motherboard Layout

Component Side



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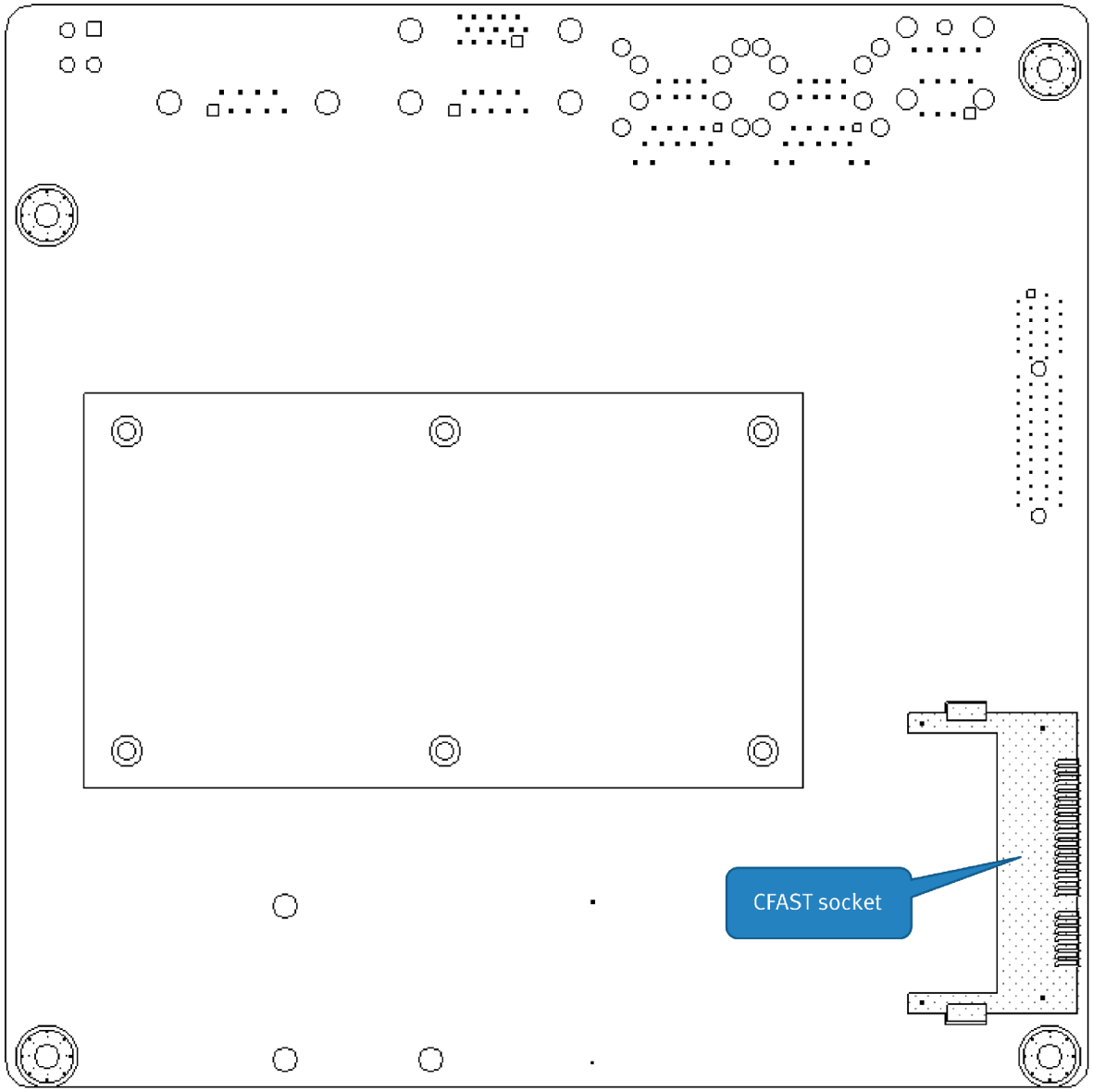
Conductor Side



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Jumper & Interfaces list

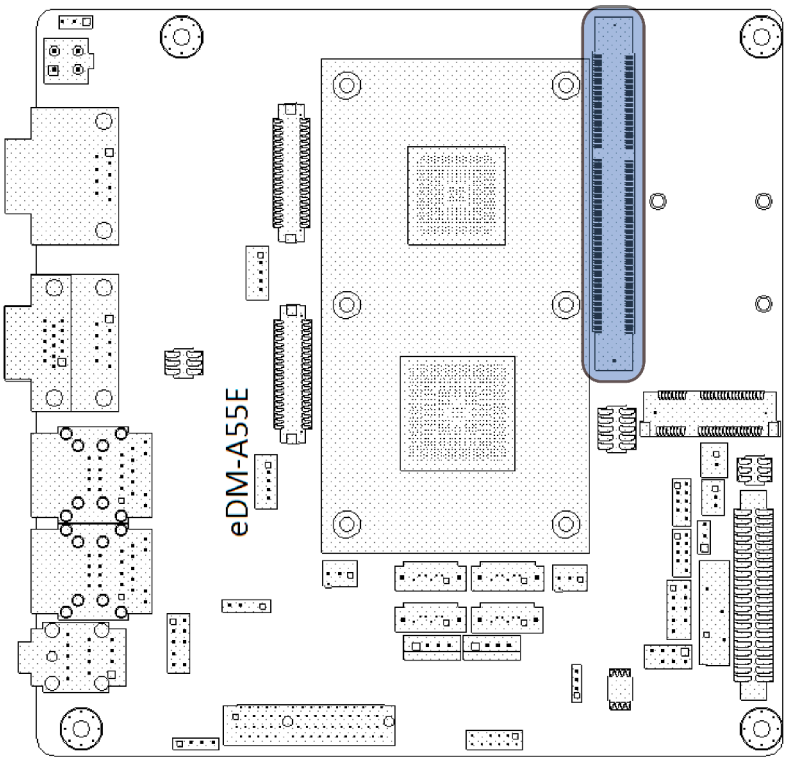
Slots & Sockets	
PCIEX4_1	PCI Express slot x4
MINI_PCIE1	Mini PCI Express slot x4
SODIMM_1	DDR3 SO-DIMM socket
CN17	CFAST socket
BATTERY1	Coin-cell RTC Battery socket

Jumpers	
DCJMP1	Select DC input voltage
JCOMPWR1	Select voltage/signal for pin 9 of COM3
JCOMPWR2	Select voltage/signal for pin 9 of COM1
CLRTC1	Clear CMOS
PSON1	Select AT/ATX mode

System Memory

SO-DIMM Socket Location

The motherboard comes with one Double Data Rate 3 (DDR3) SODIMM socket. A DDR3 module has the same physical dimensions as a DDR and DDR2 SO-DIMM, but has a 204-pin footprint. DDR3 SO-DIMMs are notched differently to prevent installation on a DDR or DDR2 SO-DIMM sockets. The following figure illustrates the location of the socket.



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Memory Configurations

You can install 1GB, 2 GB and 4GB DDR3 SO-DIMMs into the SO-DIMM socket.

NOTICE!
Installing DDR3 SO-DIMM other than the recommended ones may cause memory sizing error or system boot failure. Use any of the recommended configurations.

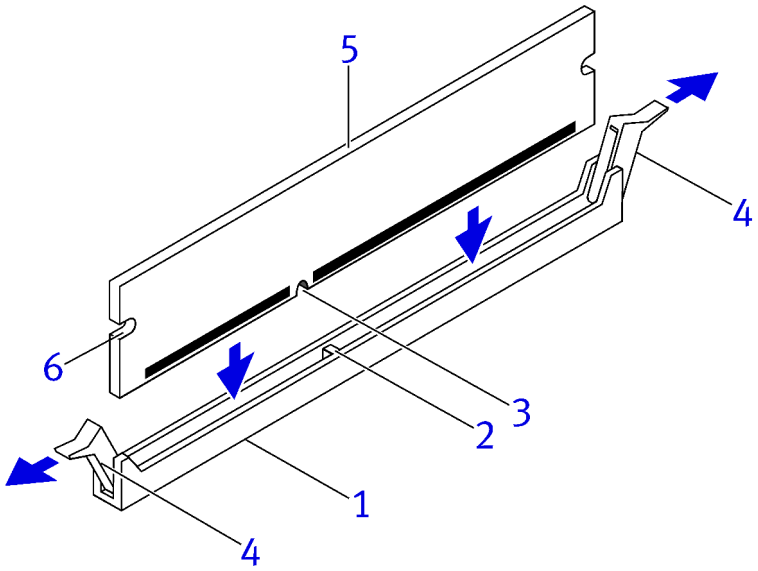
Installing SO-DIMM memory module

CAUTION!
Make sure, that you have unplugged the power supply before adding or removing SO-DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

Procedure (see illustration below):

- Locate the SO-DIMM socket on the motherboard (see “SO-DIMM Socket Location” on page 10).
- Press out the securing clip at each end of the SO-DIMM socket.
- Hold two edges of the SO-DIMM memory module carefully, and keep away of touching its connectors.
- Align the notch key on the memory module with the rib on the socket.
- Firmly press the memory module into the socket automatically snaps into the mounting notch. Do not force the SO-DIMM memory module in with extra force as the SO-DIMM memory module only fit in one direction.

  NOTICE!
  If the SO-DIMM memory module is not installed properly, the system may not boot.



1	SO-DIMM socket	4	Securing clip
2	Rib	5	SO-DIMM memory module
3	Notch key	6	Mounting notch (2x)

NOTICE!
A DDR3 SO-DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a SO-DIMM into a socket to avoid damaging the SO-DIMM.
The DDR3 SO-DIMM socket does not support DDR SO-DIMMs. DO NOT install DDR SO-DIMMs to the DDR3 SO-DIMM socket.

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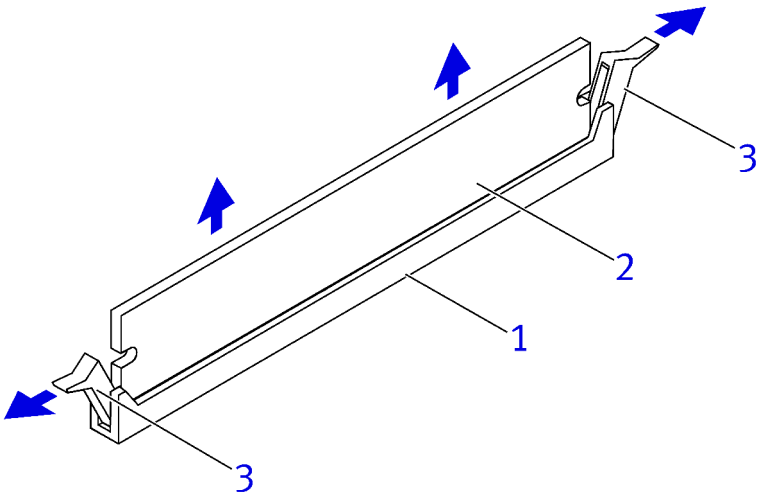
Removing SO-DIMM memory module

Procedure (see illustration below):

- Locate the SO-DIMM socket on the motherboard (see “SO-DIMM Socket Location” on page 10).
- Press out the securing clip at each end of the SO-DIMM socket.
- Lift the SO-DIMM memory module out of its socket.
  If the memory module is difficult to remove, gently ease the memory module back and forth to remove it from the SO-DIMM socket.



1 SO-DIMM socket
2 SO-DIMM memory module
3 Securing clip

Expansion Slots

In the future, you may need to install expansion cards. The following sub sections describe how to install them properly.

CAUTION!
Make sure, that you unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

Installing an Expansion Card

Procedure:

- Before installing the expansion card, read the documentation of it and make the necessary hardware settings for the card.
- Remove the system unit cover, if your motherboard is already installed in a chassis.
- Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
- Align the card connector with the slot and press firmly, until the card is completely seated on the slot.
- Secure the card to the chassis with the screw you removed earlier.
- Replace the system cover.

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Configuring an Expansion Card

After installing the expansion card, configure it by adjusting the software settings.

- Turn on the system and enter BIOS setup.
- If needed, assign an IRQ to the card refer to the tables on the next page.
- Install the software drivers for the expansion card.

Standard Interrupt Assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	-	Redirect to IRQ#9
3	11	IRQ holder for PCI steering*
4	12	Communications Port (COM1)*
5	13	IRQ holder for PCI steering
6	14	Floppy Disk Controller
7	15	Printer Port (LPT)*
8	3	System CMOS/Rear Time
9	4	IRQ holder for PCI steering*
10	5	IRQ holder for PCI steering*
11	6	IRQ holder for PCI steering*
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

Jumpers

Clear CMOS (CLRTC1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords. To erase the RTC RAM:

- Turn OFF the computer and unplug the power cord.
- Remove the onboard battery.
- Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds and then move the cap back to pins 1-2.
- Re-install the battery.
- Plug the power cord and turn ON the computer.
- Hold down the ‹Del› key during the boot process and enter BIOS setup to re-enter data.

NOTICE!
Except when clearing the CMOS, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!

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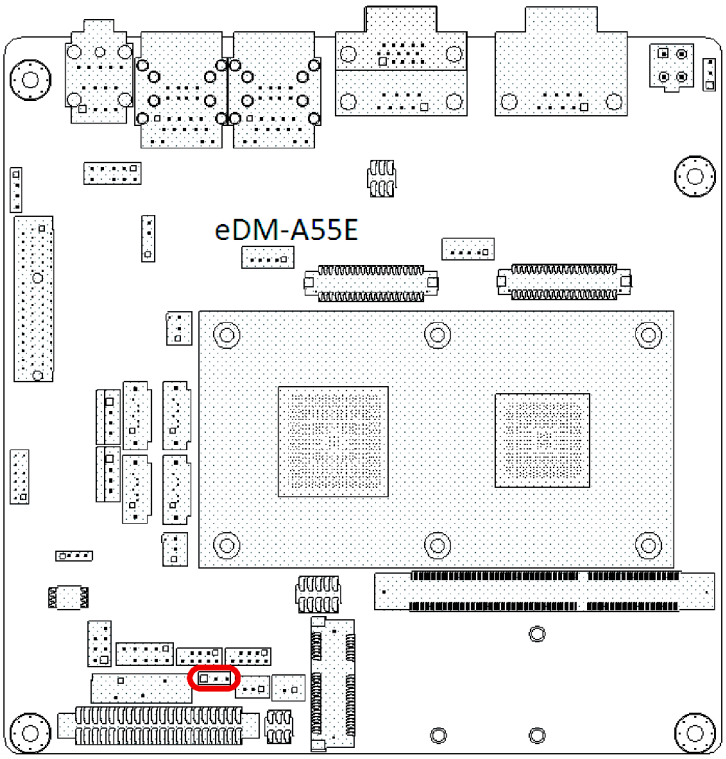
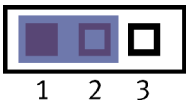
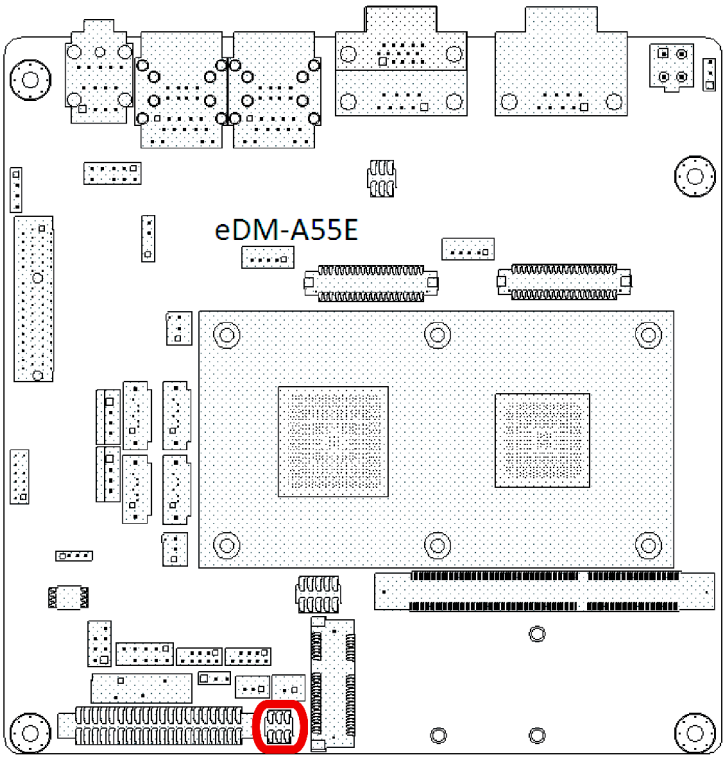


Function	Setting
Normal (Default)	1-2 close
Clear CMOS	2-3 close

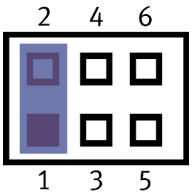


Connector type. 2.54mm Pin-Header (1x3)

COM3 RI/ +5V/ +12V Selection (JCOMPWR1)



Function	Setting
Pass “Ring signal” through (Default)	1-2 close
+5V (max. 500 mA)	3-4 close
+12V (max. 500 mA)	5-6 close



Connector type. 2mm Pin-Header (2x3)

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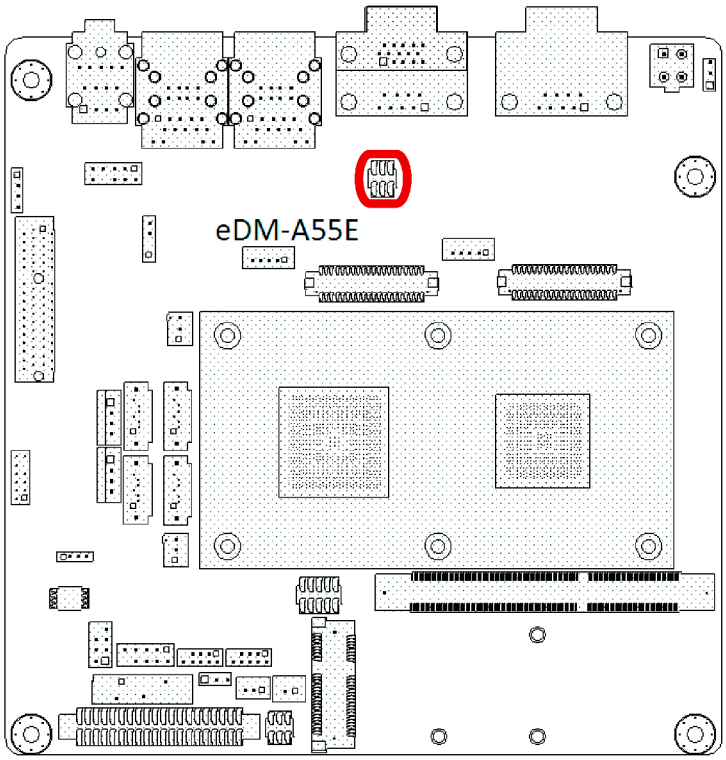
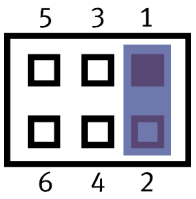
COM12-1/ +5V/ +12V Selection (JCOMPWR2)

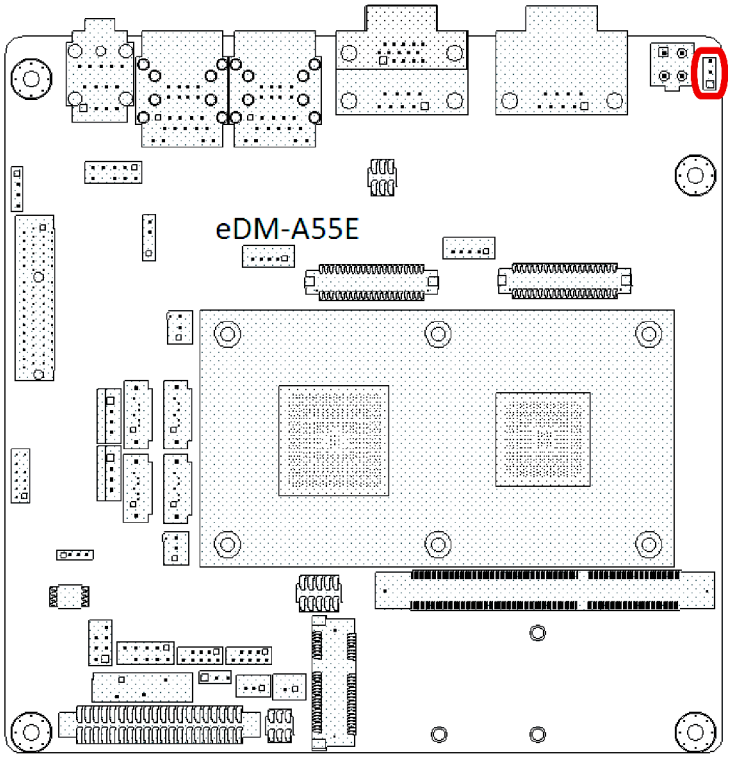


Function	Setting
Pass “Ring signal” through (Default)	1-2 close
+5V (max. 500 mA)	3-4 close
+12V (max. 500 mA)	5-6 close

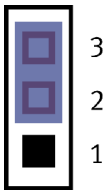


Connector type. 2mm Pin-Header (2x3)

Voltage Select 12V/24V (DCJMP1)



Function	Setting
+24V	1-2 close
+12V (Default)	2-3 close



Connector type. 2.54mm Pin-Header (1x3)

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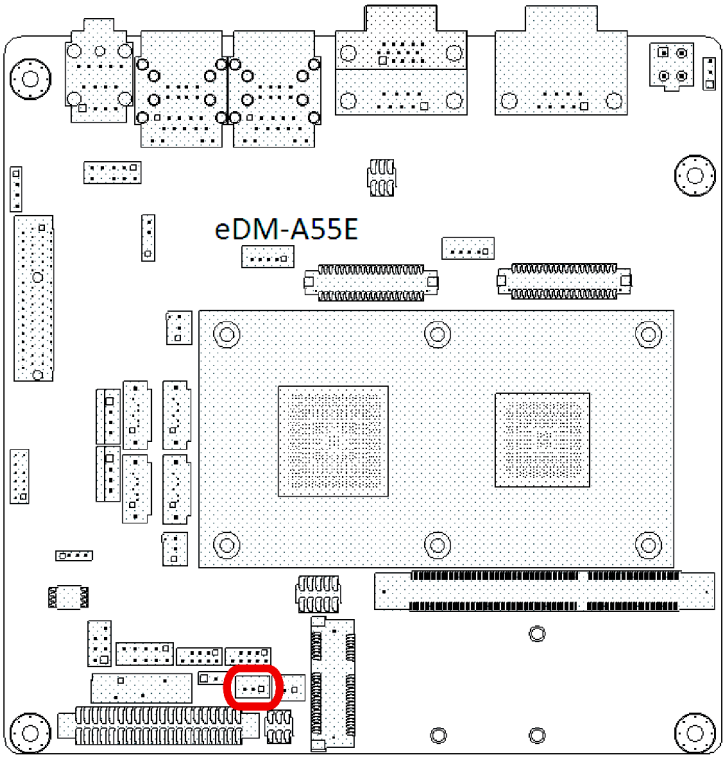
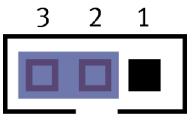
AT/ATX Mode Select (PSON1)



Function	Setting
AT mode	1-2 close
ATX mode (Default)	2-3 close



Connector type. 2mm Pin-Header (1x3)

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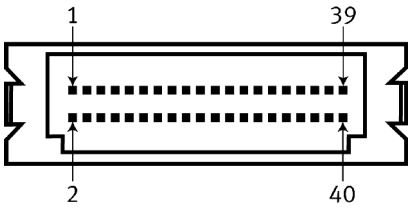
Connectors

Signals go to other parts of the system through connectors. Loose or improper connection might cause problems, please make sure all connectors are properly and firmly connected.

LVDS Connector (LVDS1 & LVDS2)

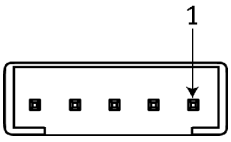
Pin	Signal	Pin	Signal
1	LVDS_VDD_3V3	2	LVDS_VDD_5V
3	LVDS_VDD_3V3	4	LVDS_VDD_5V
5	NC	6	NC
7	GND	8	GND
9	LVDSA_D1P	10	LVDSA_D0P
11	LVDSA_D1N	12	LVDSA_D0N
13	GND	14	GND
15	LVDSA_D3P	16	LVDSA_D2P
17	LVDSA_D3N	18	LVDSA_D2N
19	GND	20	GND
21	LVDSB_D1P	22	LVDSB_D0P
23	LVDSB_D1N	24	LVDSB_D0N
25	GND	26	GND
27	LVDSB_D3P	28	LVDSB_D2P
29	LVDSB_D3N	30	LVDSB_D2N
31	GND	32	GND
33	LVDSBCLK_P	34	LVDSACLK_P
35	LVDSBCLK_N	36	LVDSACLK_N
37	GND	38	GND
39	+12V	40	+12V



Connector type: HIROSE DF13-series (2x20)
Max. current per rail: 1A

LCD Backlight Connector (JBLK1 & JBLK2)

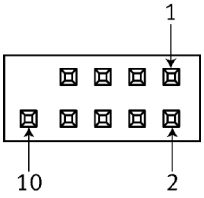
Pin	Signal
1	+12V
2	GND
3	BLK_ENABLE
4	BKL_CONTROL
5	+5V



Connector type: JST PHR-series (1x5)
Max. current per rail: 1A

USB Connector (USB56 & USB78)

Pin	Signal	Pin	Signal
1	USBA_VDD_5V	2	USBB_VDD_5V
3	USBA_D-	4	USBB_D-
5	USBA_D+	6	USBB_D+
7	GND	8	GND
9	(no pin)	10	GND



Connector type: 2mm Pin-Header (2x5)
Max. current per rail: 500 mA

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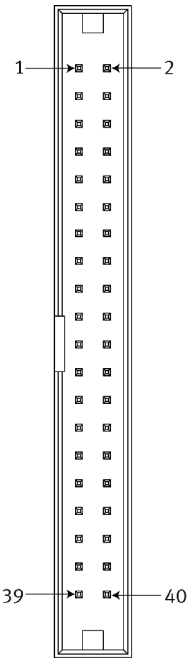
COM Connector (COM3-6)

Pin	Signal	Pin	Signal
1	DDCD3#	2	DDSR3#
3	RRXD3	4	RRTS3#
5	TTXD3	6	CCTS3#
7	DDTR3#	8	depends on JCOMPWR1
9	GND	10	GND
11	DDCD4#	12	DDSR4#
13	RRXD4	14	RRTS4#
15	TTXD4	16	CCTS4#
17	DDTR4#	18	RRI4
19	GND	20	GND
21	DDCD5#	22	DDSR5#
23	RRXD5	24	RRTS5#
25	TTXD5	26	CCTS5#
27	DDTR5#	28	RRI5
29	GND	30	GND
31	DDCD6#	32	DDSR6#
33	RRXD6	34	RRTS6#
35	TTXD6	36	CCTS6#
37	DDTR6#	38	RRI6
39	GND	40	GND

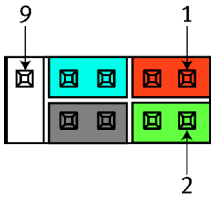


Connector type: 2mm Pin-Header (2x20) with shroud
Max. current per rail: 500 mA

The signal on Pin 8 of COM3-6 (on Pin 9 of COM3) can be configured through JCOMPWR1. Please refer to the description of JCOMPWR1 for further information.

Front Panel Header (F_PANEL)

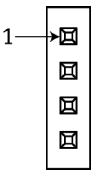
Pin	Signal	Pin	Signal
1	HDD_LED+	2	PWR_LED-
3	HDD_LED-	4	PWR_LED+
5	GND	6	PWRBTN#
7	RESET#	8	GND
9	NC		



Connector type: 2.54mm Pin-Header (2x5)

Amplified Audio Outout Header (CN22)

Pin	Signal
1	AMP_L-
2	AMP_L+
3	AMP_R-
4	AMP_R+



Connector type: 2.54mm Pin Header (1x4)

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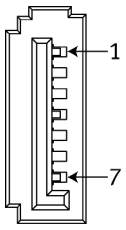
Serial ATA Connector (SATA 1, 2, 3, 4)

These Serial Advanced Technology Attachment (Serial ATA or SATA) connectors are for high-speed SATA interface ports. It is a computer bus interface for connecting host bus adapters to mass storage devices such as hard disk drives and optical drives.

Pin	Signal	Pin	Signal
1	GND	2	SATA_TX+
3	SATA_TX-	4	GND
5	SATA_RX-	6	SATA_RX+
7	GND		

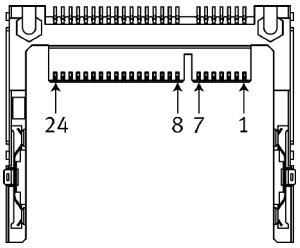


Connector type: 1.27mm Serial ATA Header

CFAST Socket

The motherboard is equipped with a CFast socket on the bottom side to support a CFast card which is based on the Serial ATA bus.

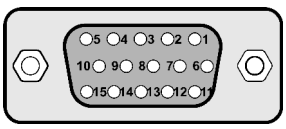
Pin	Signal	Pin	Signal
1	GND	2	SATA_TX+
3	SATA_TX-	4	GND
5	SATA_RX-	6	SATA_RX+
7	GND	8	NC
9	GND	10	NC
11	NC	12	NC
13	NC	14	GND
15	NC	16	CFAST_LED#
17	NC	18	NC
19	NC	20	+3.3V
21	+3.3V	22	GND
23	GND	24	NC



Connector type: CFast socket

VGA Connector (VGA1)

Pin	Signal	Pin	Signal
1	Red Video	2	Green Video
3	Blue Video	4	NC
5	NC	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDC Data
13	Horizontal Sync	14	Vertical Sync
15	DDC CLK		



Connector type: 15 Pin D-SUB female

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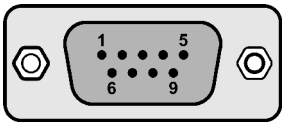
COM Connector (COM12-1 & COM12-2)

Pin	Signal	Pin	Signal
1	DCD	2	RxD
3	TxD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	depends on JCOMPWR2		



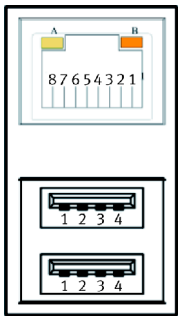
Connector type: 9 Pin D-SUB male

The signal on Pin 9 of COM12-1 can be configured through JCOMPWR2. Please refer to the description of JCOMPWR2 for further information.
For COM12-2, Pin 9 is always connected to the Ring Indicator signal regardless of the position of JCOMPWR2.

LAN/USB Connector (LAN1USB12 & LAN2USB34)

The LAN ports (2x) allow Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port pin configuration and LED indications. The optional 10/100 Mbps LAN controller allows 10/100 Mbps connection to a Local Area Network through a network hub.

Pin	Signal	Pin	Signal
1	Transmit Data +	2	Transmit Data -
3	Receive Data +	4	NC
5	NC	6	NC
7	Receive data -	8	NC
A	Active LED No link: LED off; Linked: LED orange; Data activity: LED blinking		
B	Speed LED 10Mbps: LED off; 100Mbps: LED orange; 1Gbps: LED green		



LAN

USB

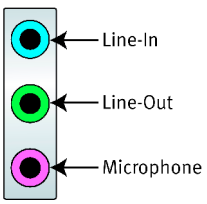
LAN connector type: RJ45 socket
USB connector type: 2.0

The 4-pin Universal Serial Bus (USB) ports (4x) are available for connecting USB 2.0 devices.

Pin	Signal
1	VCC (+5V)
2	Data -
3	Data +
4	GND

Audio Connector (AUDIO1)

Pin Color	Signal	Description
Light Blue	Line-In	This port connects a tape, CD, DVD player, or other audio sources.
Lime	Line-Out	This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.
Pink	Microphone	This port connects a microphone.



Connector type: 3.5mm Jack socket, stereo

Refer to the audio configuration table below for the function of the audio ports in 2, 4, 6, or 8-channel configuration.

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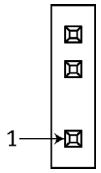
Audio 2, 4, 6, or 8-Channel Configuration

Port	Headset 2-channel	Headset 4-channel	Headset 6-channel	Headset 8-channel
Light Blue	Line in	Line in	Line in	Line in
Lime	Line out	Front speaker out	Front speaker out	Front speaker out
Pink	Mic in	Mic in	Mic in	Mic in

SPDIF OUT Connector (SPDIF_OUT1)

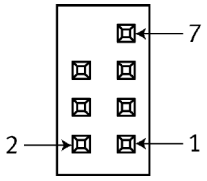
Pin	Signal
1	+5V
2	non-existent
3	SPDIF_O
4	GND



Connector type: 2.54mm Pin Header (1x4)

Serial Peripharal Bus Connector (SPI1)

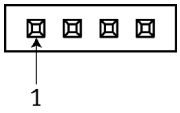
Pin	Signal	Pin	Signal
1	+3V ROM	2	GND
3	F_SPI_CS#	4	F_SPI_CLK
5	F_SPI_MISO	6	F_SPI_MOSI
7	SPI_HOLD#	8	non-existent



Connector type: 2.54mm Pin-Header (2x4)

System Management Bus Connector (SMBUS1)

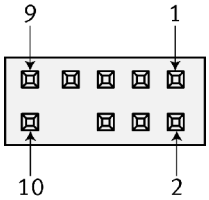
Pin	Signal
1	+3.3V
2	SCLK0
3	SDATA0
4	GND



Connector type: 2mm Pin Header (1x4)

Front Panel Audio Connector (AAFP1)

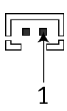
Pin	Signal	Pin	Signal
1	MIC2_L	2	GND
3	MIC2_R	4	PRESENSE
5	LIN2_R	6	SENSE1_RTN
7	SENSE_B	8	non-existent
9	LIN2_L	10	SENSE2_RTN



Connector type: 2.54mm Pin-Header (2x5)

Chassis Intrusion Connector (JCASE1)

Pin	Signal
1	CASEOP#
2	GND



Connector type: 2.5mm Pin Haeder (1x2)

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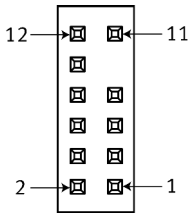
Low Pin Count Connector (JLPC1)

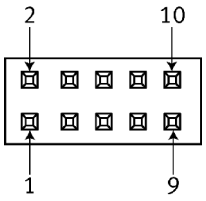
Pin	Signal	Pin	Signal
1	NC	2	+3.3V
3	LAD3	4	A_RST#
5	LAD1	6	LAD2
7	LFRAME#	8	LAD0
9	non-existent	10	GND
11	PCI_CLK3A	12	GND



Connector type: 2mm Pin-Header (2x6)

Digital I/O Connector (JDIO1)

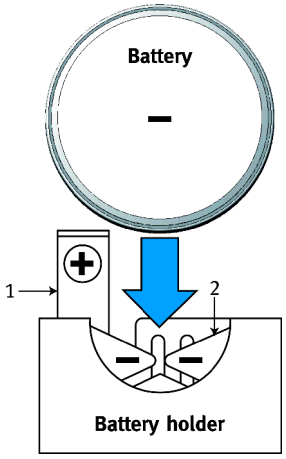
Pin	Signal	Pin	Signal
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	+5VSB	10	GND



Connector type: 2mm Pin-Header (2x5)

Battery Holder (BATTERY1)

Pin	Signal
1	+Voltage
2	-Voltage (GND)



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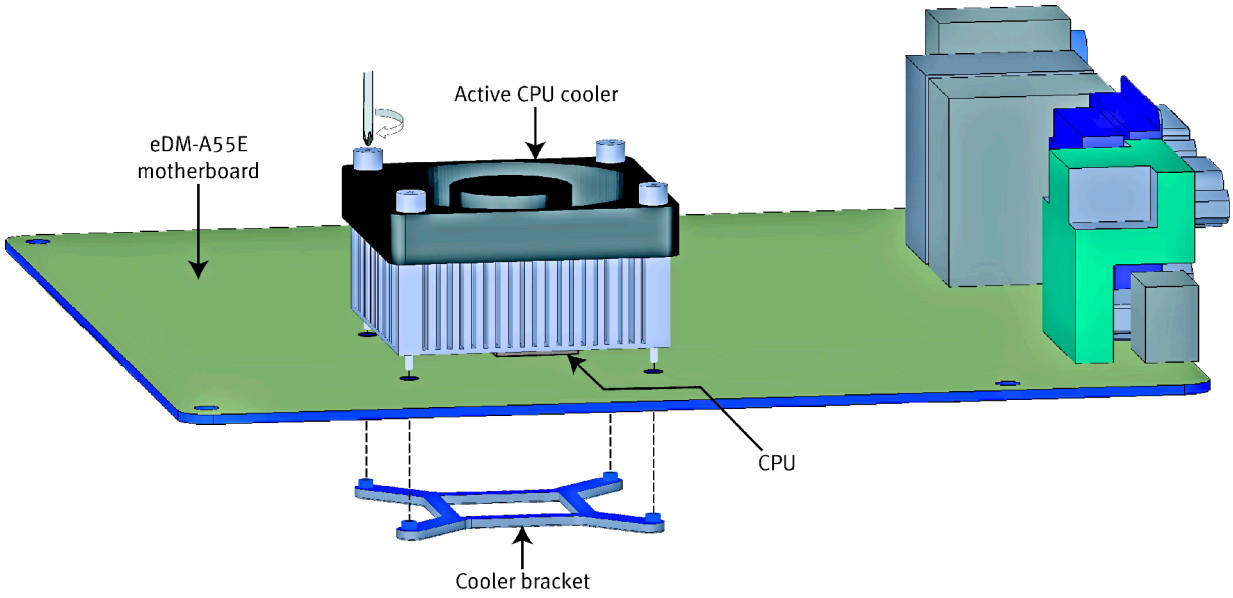
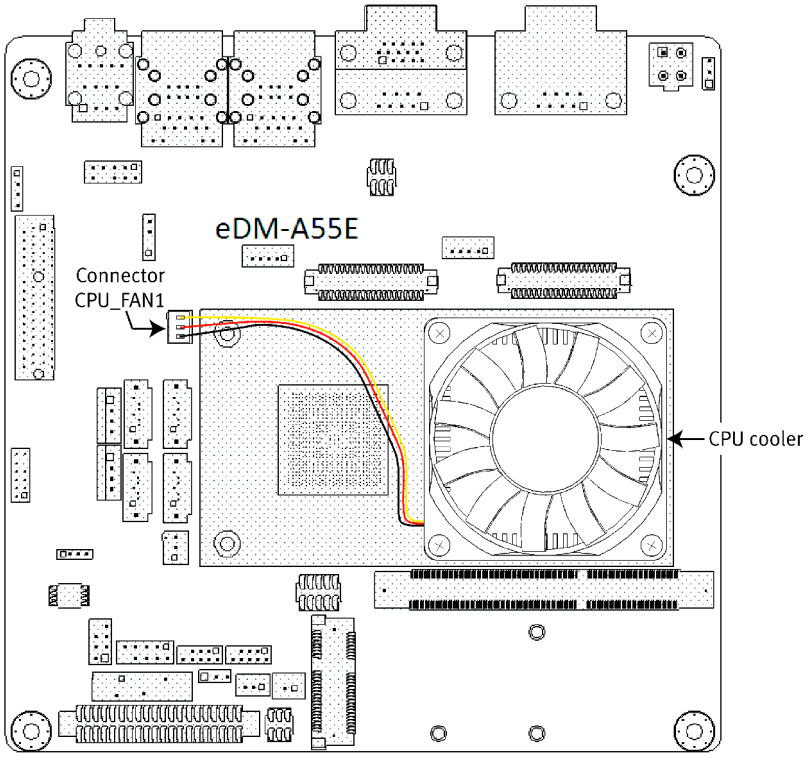
Installing the Active CPU Cooler

- Before installing the active CPU cooler onto the motherboard, please first remove the protection film over the heat paste on the bottom of the cooler.
- Place the cooler bracket on the bottom side of the mainboard so that the bolts stick through the mounting holes.
- Gently place the CPU cooler onto the CPU core.
- Align and attach the screws to secure the CPU cooler to the motherboard. Please make sure to turn the screws gently and evenly, and avoid over-tightening.
- Connect the connector on the cooler connection cable to the CPU_FAN1 connector on the motherboard.





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BIOS Setup

This chapter tells how to change the system set tings through the BIOS setup menus. Detailed descriptions of the BIOS parameters are also provided.

BIOS Setup Program

This motherboard supports a programmable firmware chip that you can update by using the provided utility. Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to "Run Setup". This section explains how to configure your system by using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the firmware hub.

The firmware hub on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press ‹Del› during the Power-On-Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing ‹Ctrl + Alt + Delete›, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only, if the first two failed.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the Load Optimized Defaults from the BIOS menu screen.
- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
- Visit the system builder's website to download the latest BIOS file for this motherboard

Legend Box

The keys in the legend bar allow you to navigate through the various setup menus.

Keys	Description
→←	Select Screen
↑↓	Select Item
Enter	Go to Sub Screen
+ –	Change Option / Field
PGDN	Next Page
PGUP	Previous Page
HOME	Go to Top of Screen
END	Go to Bottom of Screen
F2/F3	Change Colors
F7	Discard Changes
F8	Load Failsafe Defaults
F9	Load Optimal Defaults
F10	Save and Exit
ESC	Exit

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List Box

This box appears only in the opening screen. The box displays an initial list of configurable items in the menu you selected.

Sub Menu

Note that a right pointer symbol (►) appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press ‹Enter›. The sub-menu appears. Use the legend keys to enter values and move from field to field within a sub-menu as you would within a menu. Use the ‹ESC› key to return to the main menu.

Take some time to familiarize yourself with the legend keys and their corresponding functions. Practice navigating through the various menus and submenus. If you accidentally make unwanted changes to any of the fields, press ‹F6› to load the fail-safe default values. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right of each menu. This window displays the help text for the currently highlighted field.

BIOS Menu Screen

When you enter the BIOS, the following screen appears. The BIOS menu screen displays the items that allow you to make changes to the system configuration. To access the menu items, press the up/down/right/left arrow key on the keyboard until the desired item is highlighted, then press [Enter] to open the specific menu.

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
BIOS Information
Compliancy UEFI 2.1
Project Version eDM-A55E CAA1v114
Build Date and Time 02/22/2013 18:43:17
OEM Info NO
Memory Information
Total Memory 2048 MB (DDR3)
System Date [Fri 06/13/2008]
System Time [05:50:29]
Set the Date. Use Tab to switch between Data elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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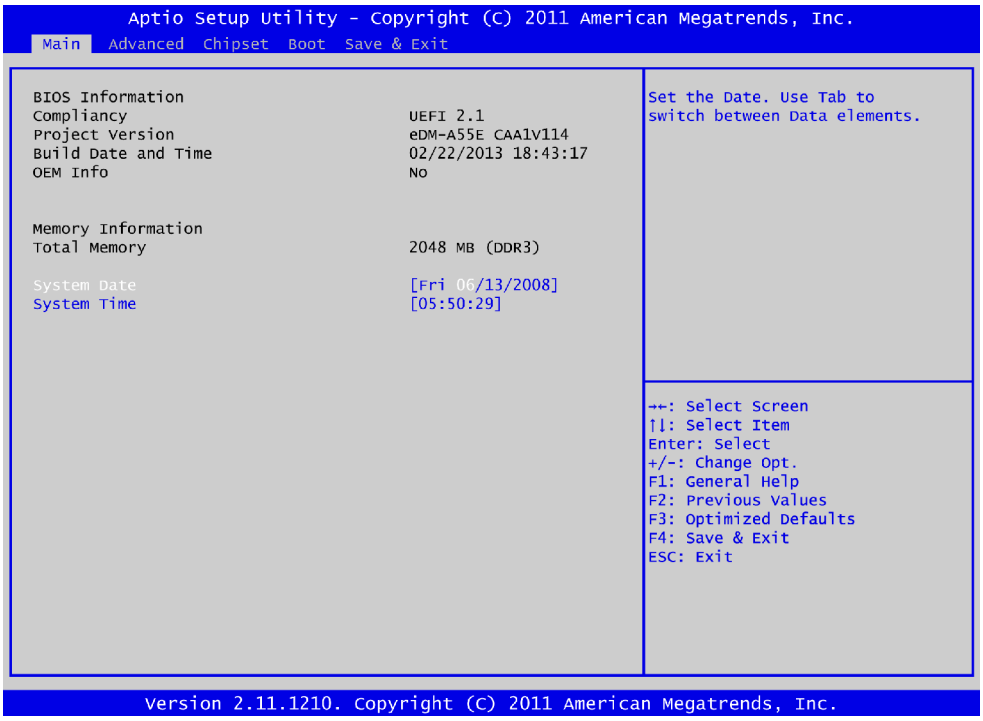
Main Menu

When you first enter the setup utility, you will enter the Main Menu setup screen, you always return to the Main Menu setup screen by selecting the Main tab. System Time/Date can be set up as described below.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
BIOS Information
Compliancy UEFI 2.1
Project Version eDM-A55E CAA1V114
Build Date and Time 02/22/2013 18:43:17
OEM Info No
Memory Information
Total Memory 2048 MB (DDR3)
System Date [Fri 06/13/2008]
System Time [05:50:29]
Set the Date. Use Tab to switch between Data elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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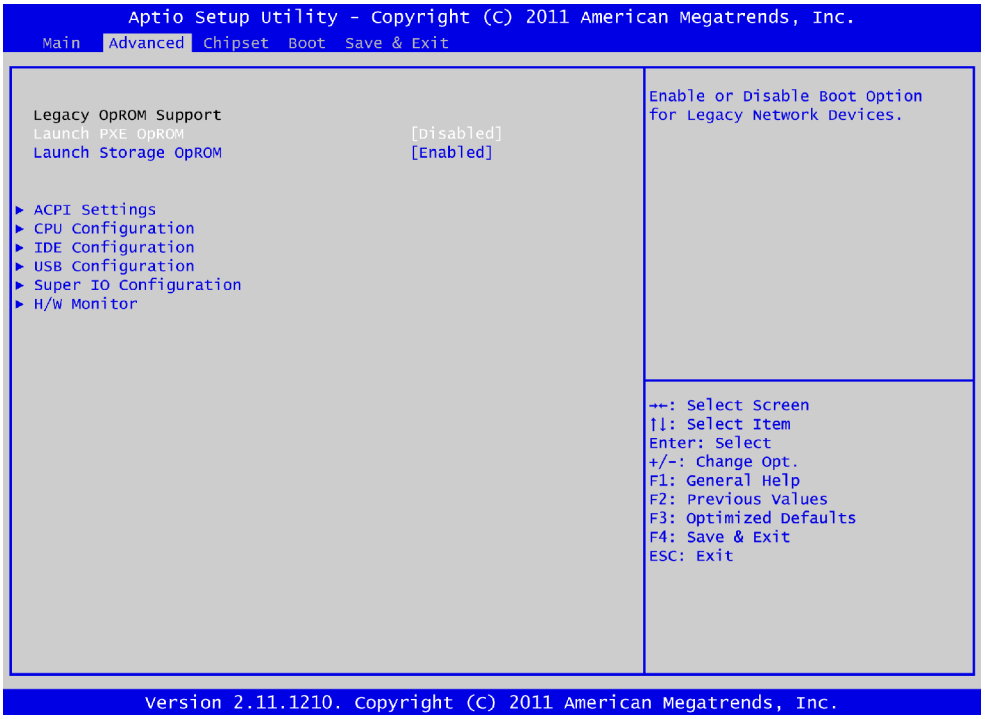
- Use this option to change the system time and date. Highlight “System Time” or “System Date” using the arrow keys. Enter new value through the keyboard. Press tab key or arrow keys to move between fields. The date must be entered in MM/DD/YY format, based on the 24-hour clock. The time is entered in HH:MM:SS format.

Advanced Menu


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Legacy OpROM Support
Launch PXE OpROM [Disabled]
Launch Storage OpROM [Enabled]
▶ ACPI Settings
▶ CPU Configuration
▶ IDE Configuration
▶ USB Configuration
▶ Super IO Configuration
▶ H/W Monitor
Enable or Disable Boot Option for Legacy Network Devices.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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- **Launch PXE OpROM**
  Use this item to enable or disable the boot ROM function of the onboard LAN chip when the system boots up.

The Advanced Menu also allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub-menus.

- ACPI Settings
- CPU Configuration
- IDE Configuration
- USB Configuration
- Super IO Configuration
- H/W Monitor

For items marked with "►", please press Enter for more options.

ACPI Settings

You can use this sub-menu to select options for the ACPI configuration, and change the value of the selected option. A description of the selected item appears on the top right frame of the screen.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
ACPI Sleep State [S3 Suspend to RAM]
Resume On LAN1 [Disabled]
Resume On LAN2 [Disabled]
Resume On RTC Alarm [Disabled]
Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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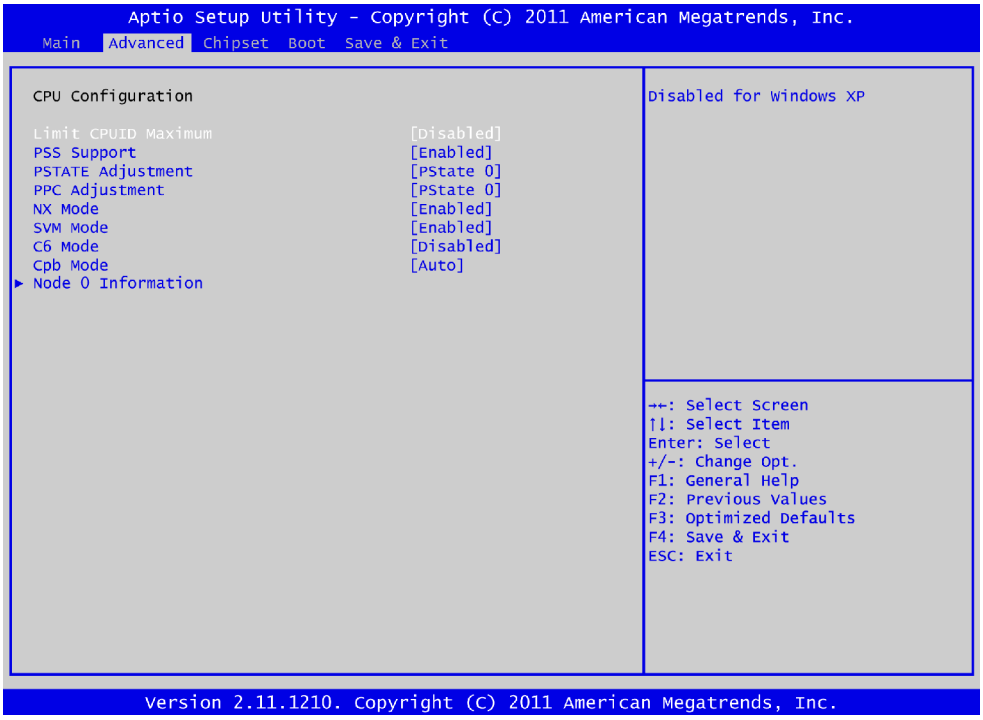
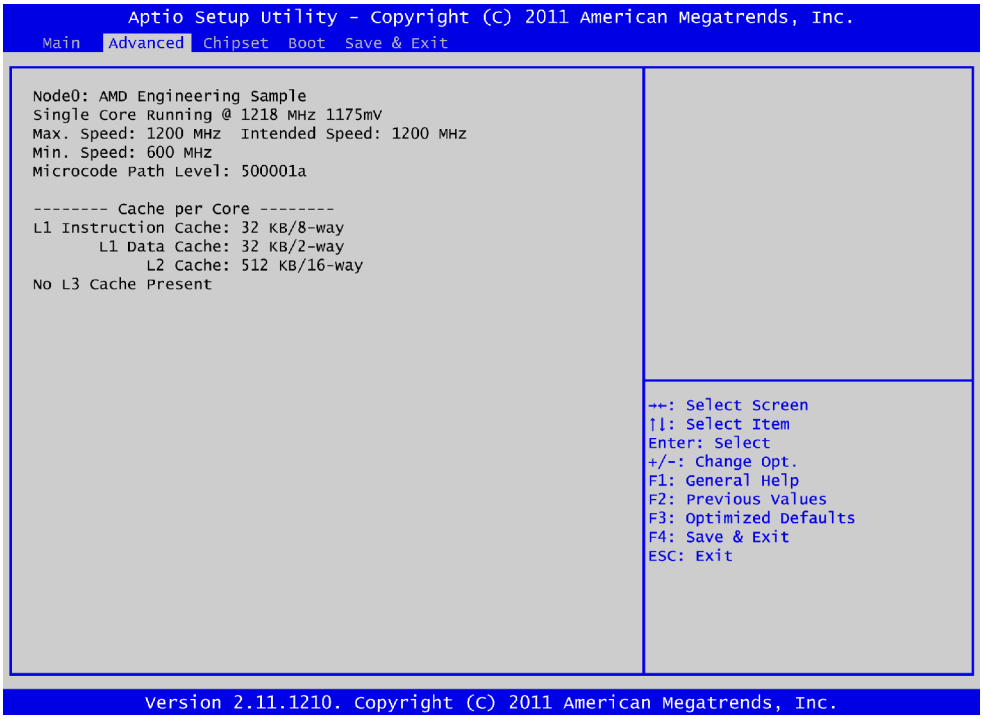
CPU Configuration



- **Node 0 Information**


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Node0: AMD Engineering Sample
Single Core Running @ 1218 MHz 1175mV
Max. Speed: 1200 MHz Intended Speed: 1200 MHz
Min. Speed: 600 MHz
Microcode Path Level: 500001a
-------- Cache per Core --------
L1 Instruction Cache: 32 KB/8-way
L1 Data Cache: 32 KB/2-way
L2 Cache: 512 KB/16-way
No L3 Cache Present
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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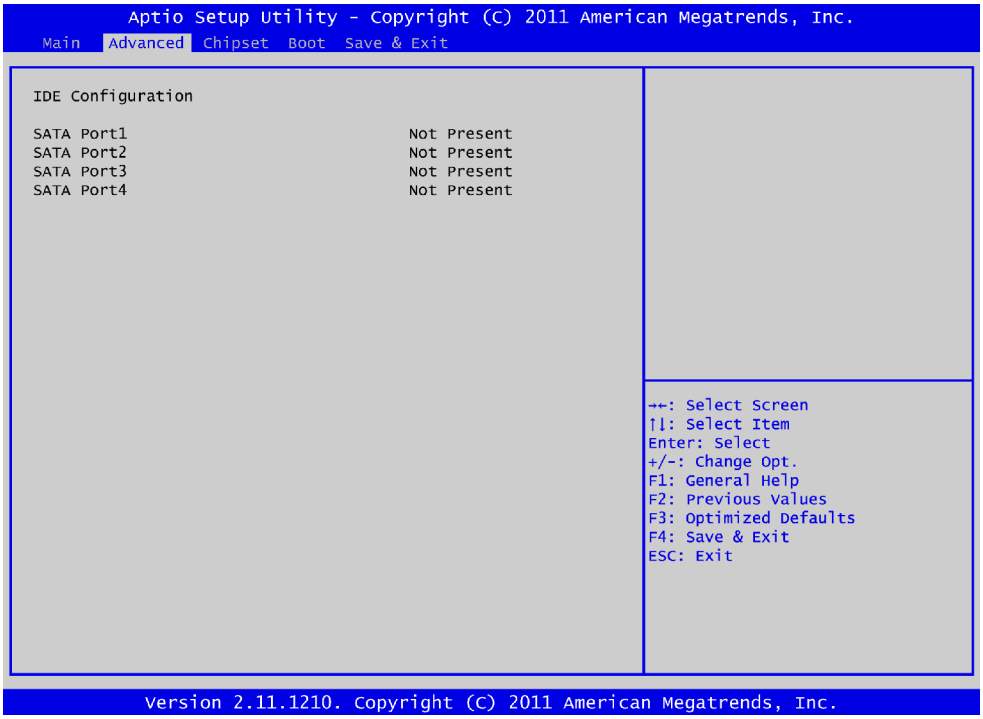
IDE Configuration

In the IDE Configuration sub-menu, you can see the currently installed hardware in the SATA ports. During system boot up, the BIOS automatically detects the presence of SATA devices.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
IDE Configuration
SATA Port1 Not Present
SATA Port2 Not Present
SATA Port3 Not Present
SATA Port4 Not Present
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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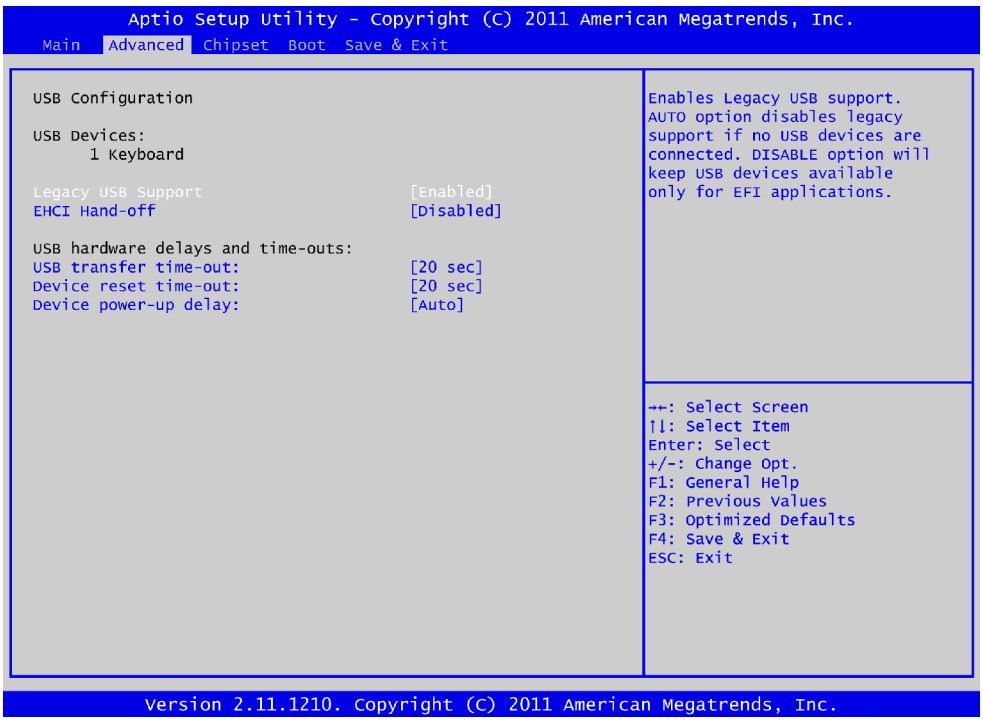
USB Configuration

You can use this sub-menu to select options for the USB Configuration, and change the value of the selected option. A description of the selected item appears on the top right frame of the screen.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
USB Configuration
USB Devices:
1 Keyboard
Legacy USB Support [Enabled]
EHCI Hand-off [Disabled]
USB hardware delays and time-outs:
USB transfer time-out: [20 sec]
Device reset time-out: [20 sec]
Device power-up delay: [Auto]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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- **Legacy USB Support**
  Use this item to enable or disable support for USB device on legacy operating system. The default setting is Enabled. Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.

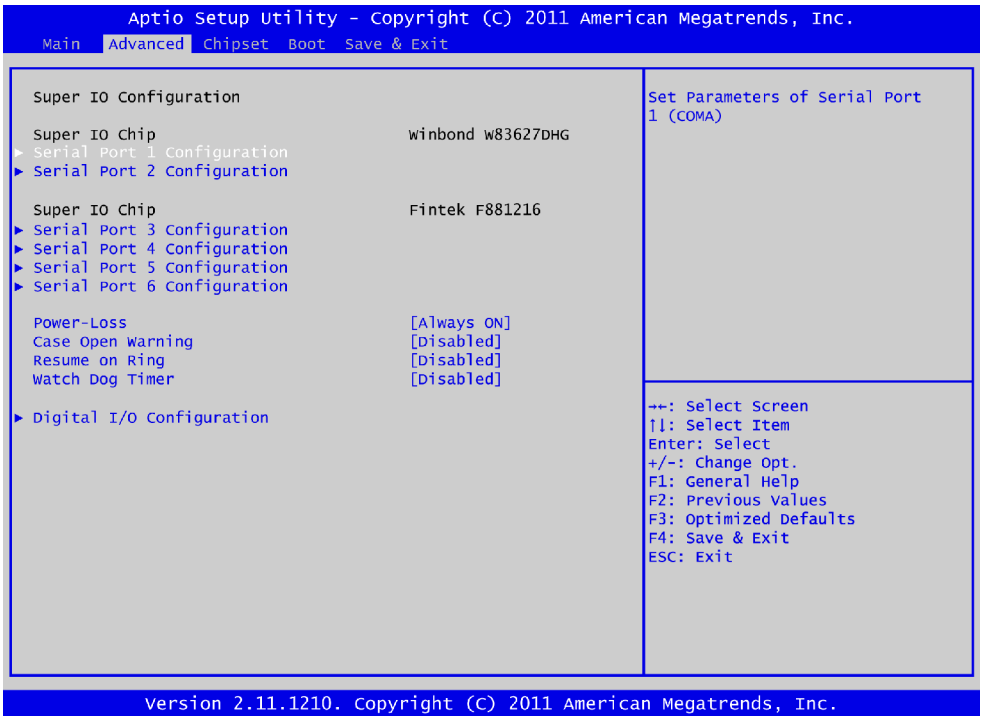
- **USB transfer time-out**
  The time-out value for control, bulk and interrupt transfers.

- **Device reset time-out**
  USB mass storage device start unit command time-out.

- **Device power-up delay**
  Maximum time the device will take before it properly reports itself to the host controller. Auto option uses default value: for a root port it is 100ms, for a hub port the delay is taken from hub descriptor.

Super IO Configuration

You can use this sub-menu to select options for the Super IO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "▶", please press ‹Enter› for more options.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Super IO Configuration
Super IO Chip Winbond W83627DHG
▶ Serial Port 1 Configuration
▶ Serial Port 2 Configuration
Super IO Chip Fintek F881216
▶ Serial Port 3 Configuration
▶ Serial Port 4 Configuration
▶ Serial Port 5 Configuration
▶ Serial Port 6 Configuration
Power-Loss [Always ON]
Case Open Warning [Disabled]
Resume on Ring [Disabled]
Watch Dog Timer [Disabled]
▶ Digital I/O Configuration
Set Parameters of Serial Port 1 (COMA)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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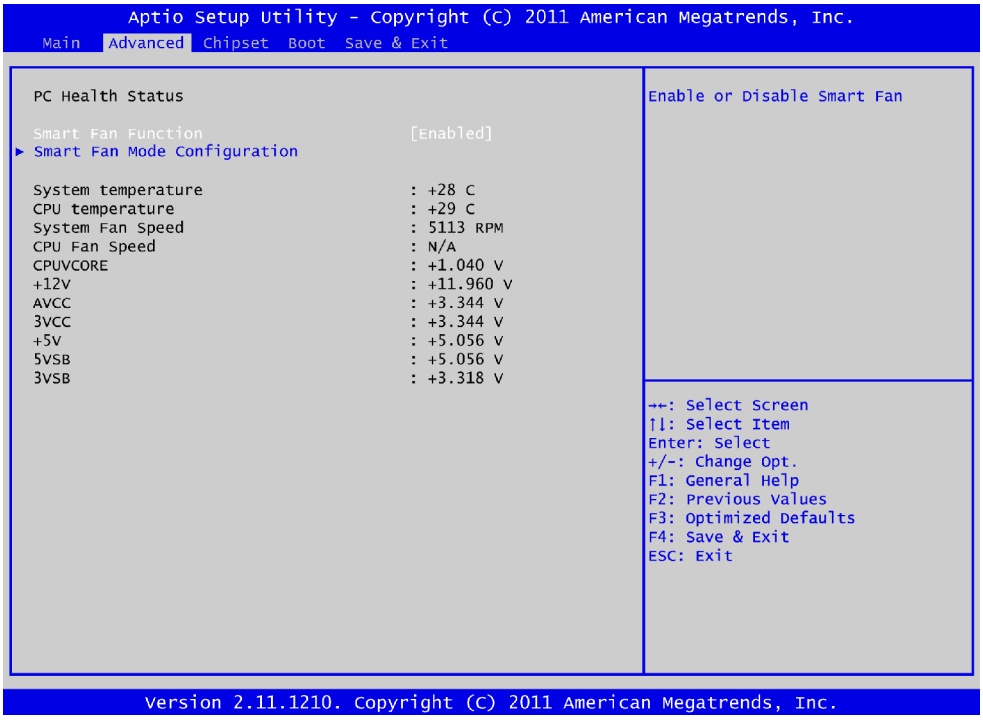
HW Monitor

This sub-menu monitors hardware health.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
PC Health Status
Smart Fan Function [Enabled]
▶ Smart Fan Mode Configuration
System temperature : +28 C
CPU temperature : +29 C
System Fan Speed : 5113 RPM
CPU Fan Speed : N/A
CPUVCORE : +1.040 V
+12V : +11.960 V
AVCC : +3.344 V
3VCC : +3.344 V
+5V : +5.056 V
5VSB : +5.056 V
3VSB : +3.318 V
Enable or Disable Smart Fan
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Chipset Menu

The Chipset menu displays base memory, extended memory, and total memory detected during POST (Power On Self Test). For items marked with "►", please press Enter for more options.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
► North Bridge
► Display Config & Select
► South Bridge
North Bridge Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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North Bridge Configuration

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- **Memory Configuration**

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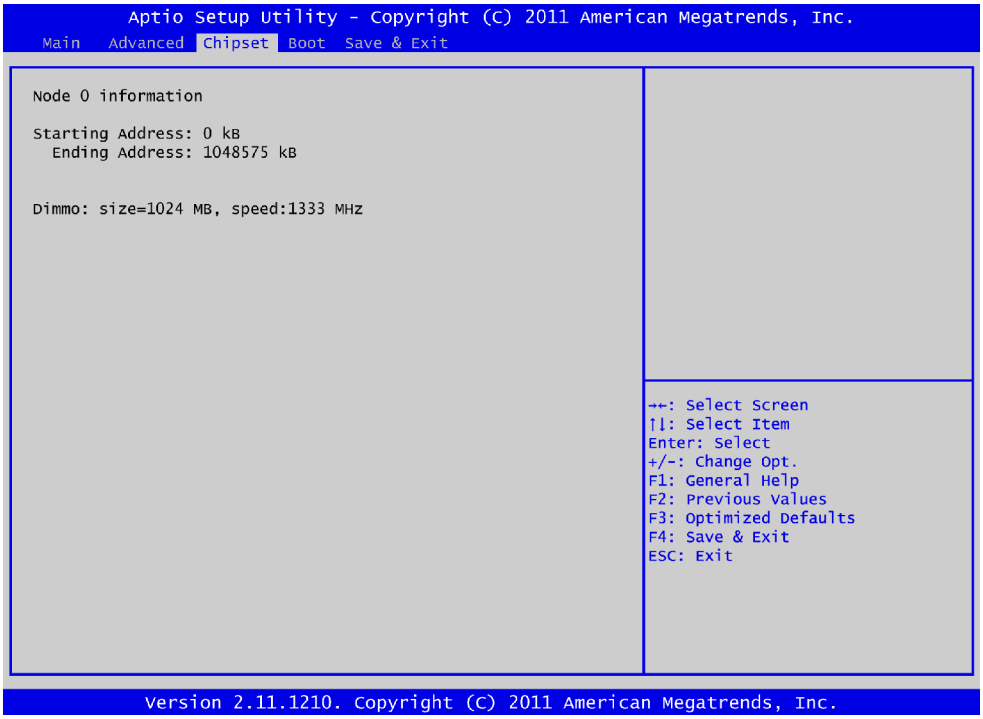
Main Advanced Chipset Boot Save & Exit
Memory Configuration
Integrated Graphics [Force]
UMA FRame buffer Size [256M]
IOMMU Mode [Disabled]
Enable Integrated Graphics controller
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.

- **Node 0 Information**


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Node 0 information
Starting Address: 0 kB
Ending Address: 1048575 kB
Dimmo: size=1024 MB, speed:1333 MHz
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Display Config Select

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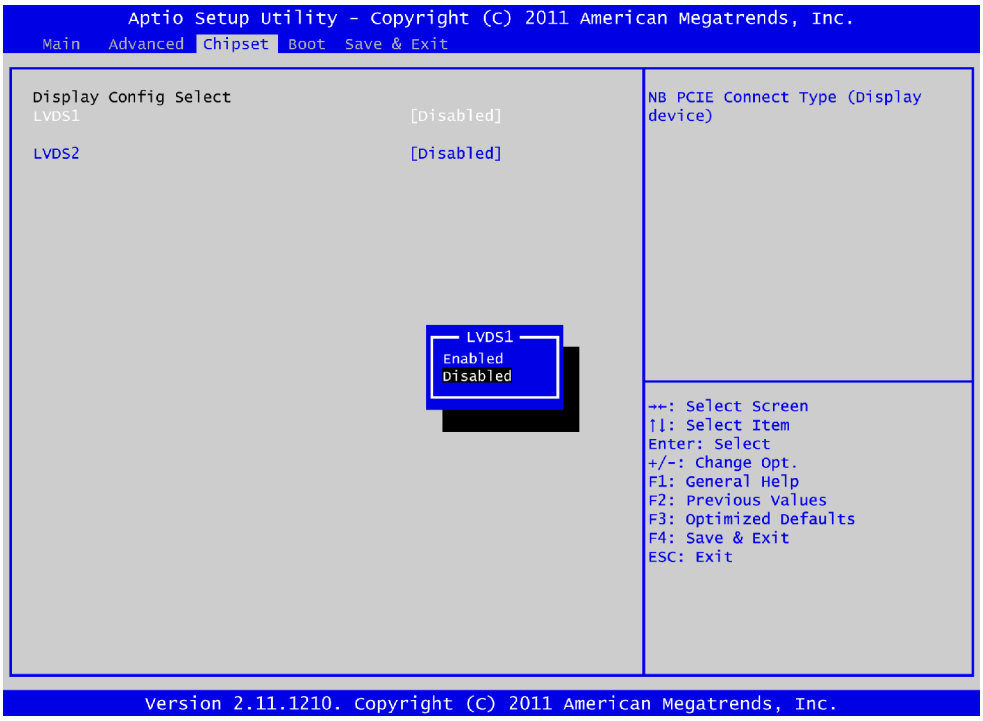
Main Advanced Chipset Boot Save & Exit
Display Config Select
LVDS1 [Disabled]
LVDS2 [Disabled]
NB PCIE Connect Type (Display device)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.



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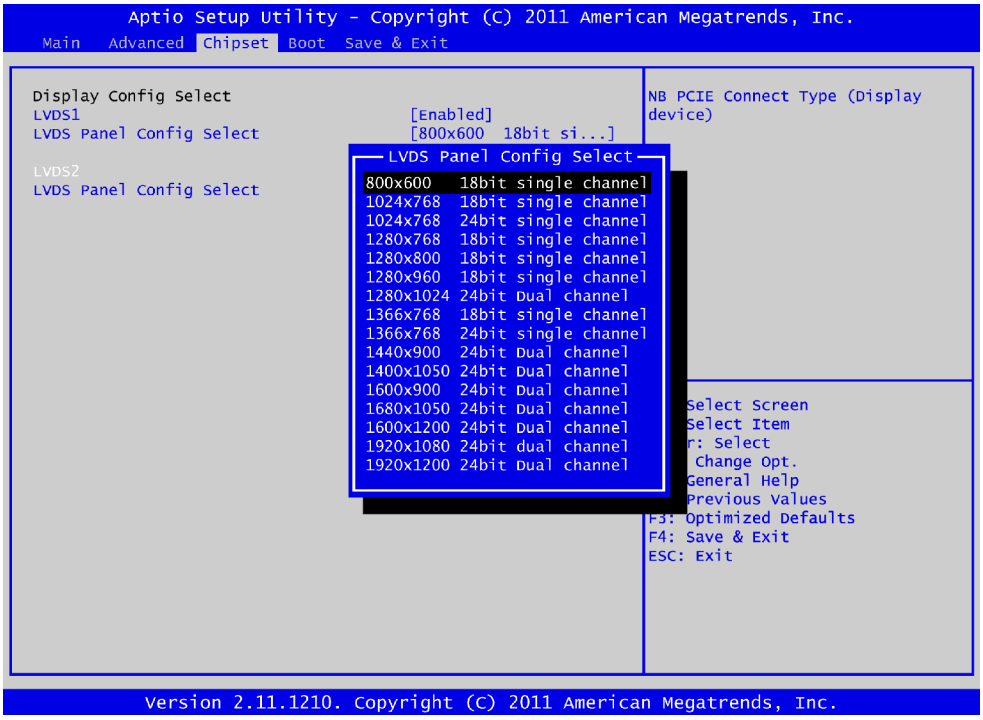
Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Display Config Select
LVDS1 [Enabled]
LVDS Panel Config Select [800x600 18bit si...]
LVDS2
LVDS Panel Config Select
LVDS Panel Config Select
800x600 18bit single channel
1024x768 18bit single channel
1024x768 24bit single channel
1280x768 18bit single channel
1280x800 18bit single channel
1280x960 18bit single channel
1280x1024 24bit Dual channel
1366x768 18bit single channel
1366x768 24bit single channel
1440x900 24bit Dual channel
1400x1050 24bit Dual channel
1600x900 24bit Dual channel
1680x1050 24bit Dual channel
1600x1200 24bit Dual channel
1920x1080 24bit dual channel
1920x1200 24bit Dual channel
NB PCIE Connect Type (Display device)
Select Screen
Select Item
r: Select
Change Opt.
General Help
Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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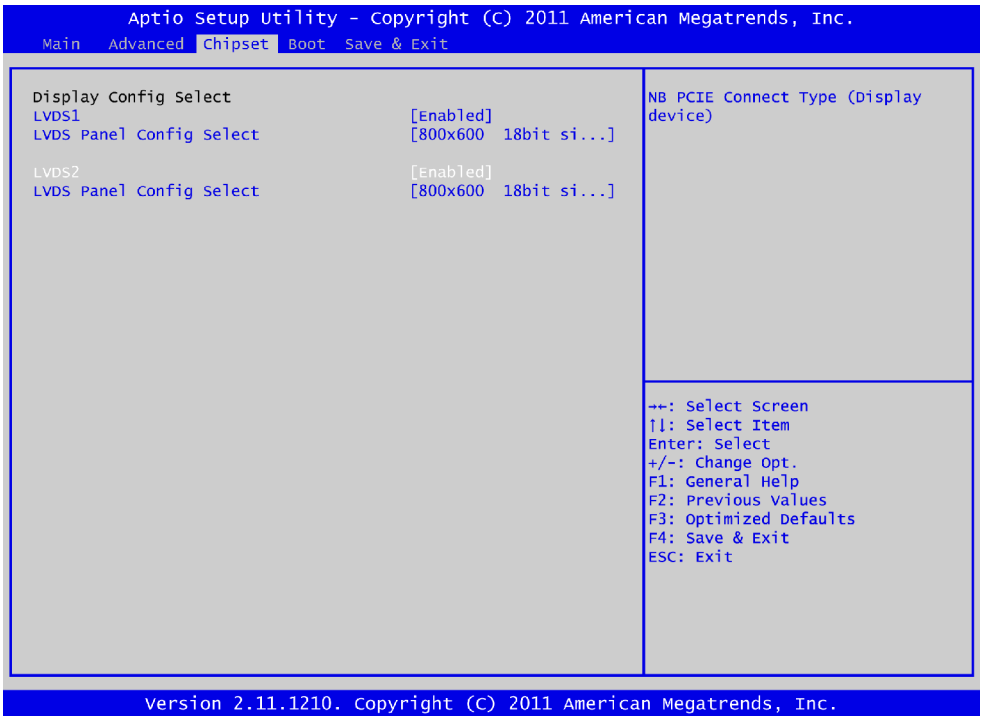
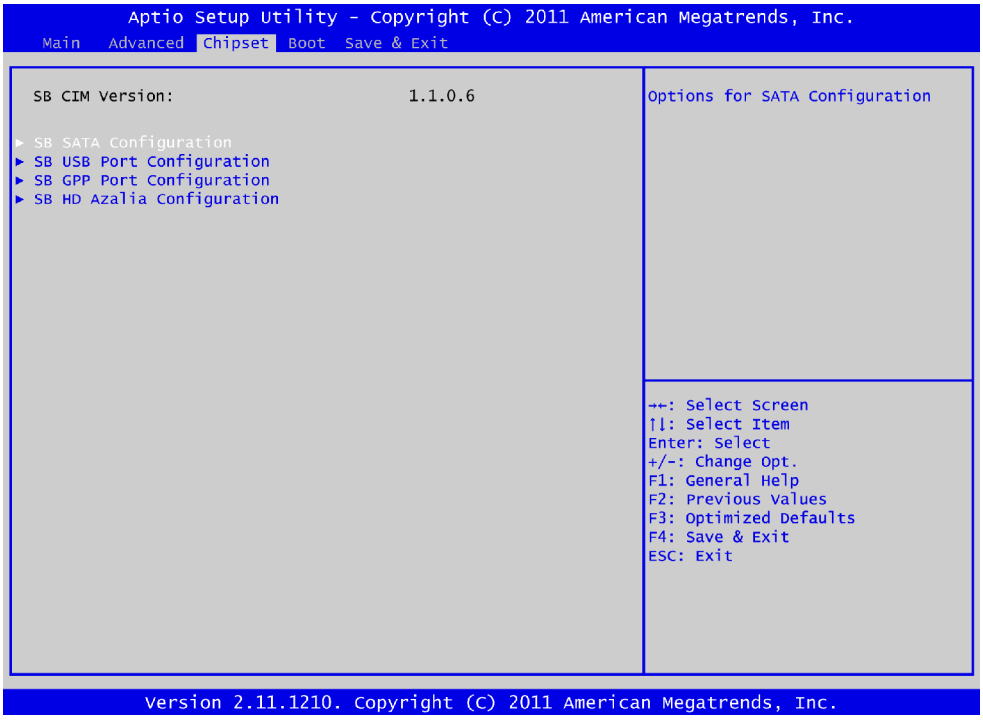

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Display Config Select
LVDS1 [Enabled]
LVDS Panel Config Select [800x600 18bit si...]
LVDS2 [Enabled]
LVDS Panel Config Select [800x600 18bit si...]
NB PCIE Connect Type (Display device)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.

South Bridge


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
SB CIM Version: 1.1.0.6
▶ SB SATA Configuration
▶ SB USB Port Configuration
▶ SB GPP Port Configuration
▶ SB HD Azalia Configuration
Options for SATA Configuration
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.

- **SB SATA Configuration**

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Main Advanced Chipset Boot Save & Exit
OnChip SATA Type [Native IDE]
Native IDE /n RAID /n AHCI /n
AHCI /n Legacy IDE /n
IDE->AHCI /n HyperFlash
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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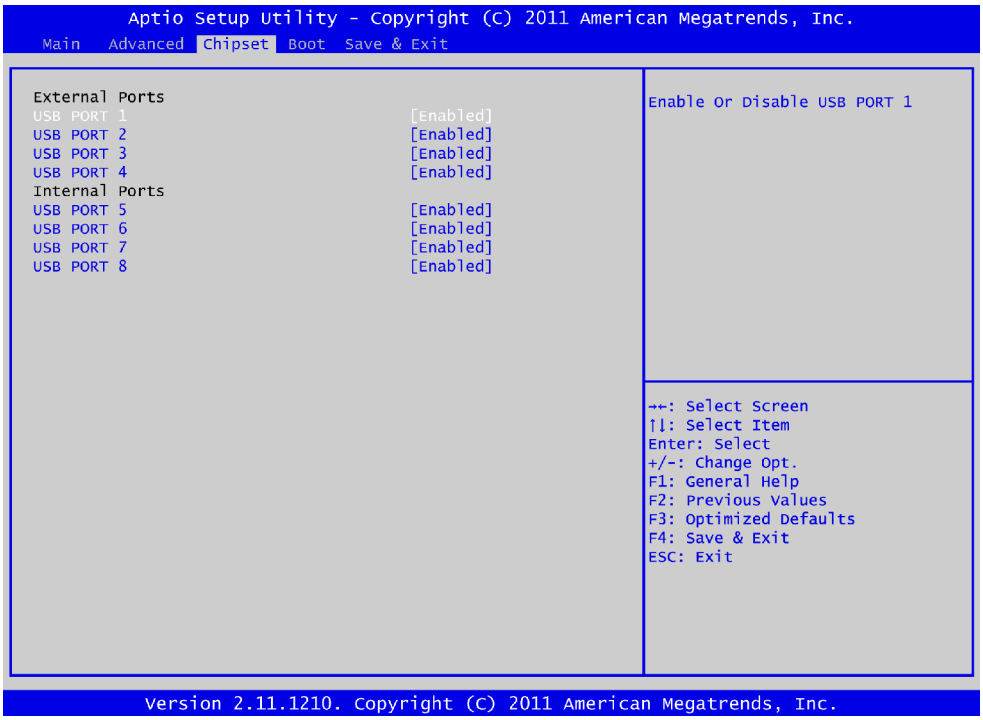
- **SB USB Port Configuration**


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
External Ports
USB PORT 1 [Enabled]
USB PORT 2 [Enabled]
USB PORT 3 [Enabled]
USB PORT 4 [Enabled]
Internal Ports
USB PORT 5 [Enabled]
USB PORT 6 [Enabled]
USB PORT 7 [Enabled]
USB PORT 8 [Enabled]
Enable Or Disable USB PORT 1
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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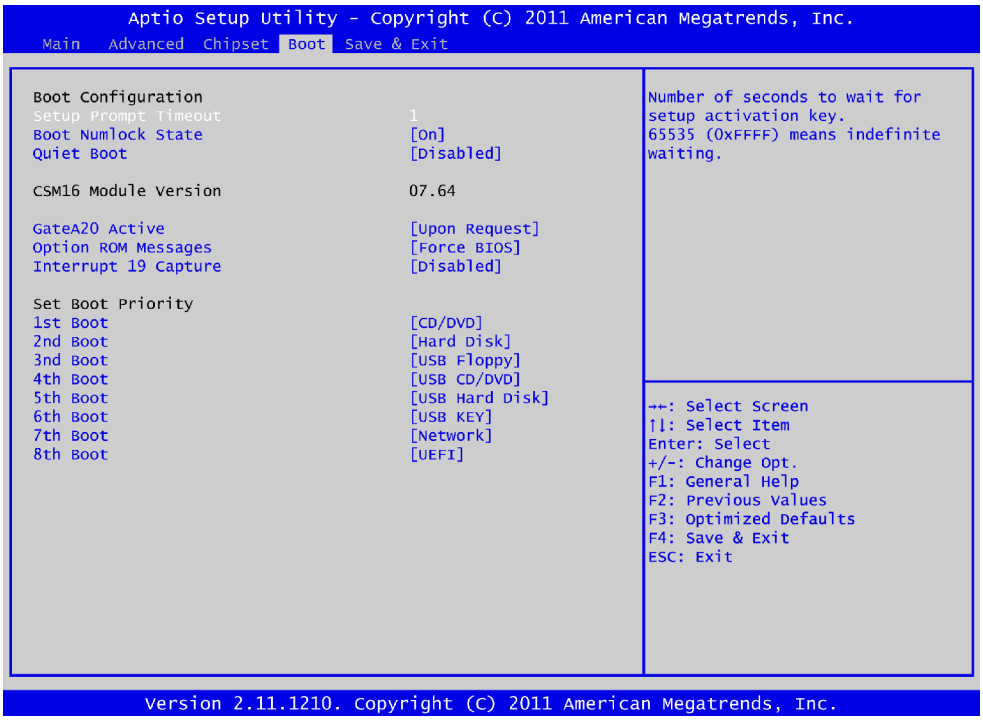
Boot Menu

The Boot menu allows users to change boot options of the system.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Boot Numlock State [On]
Quiet Boot [Disabled]
CSM16 Module Version 07.64
GateA20 Active [Upon Request]
Option ROM Messages [Force BIOS]
Interrupt 19 Capture [Disabled]
Set Boot Priority
1st Boot [CD/DVD]
2nd Boot [Hard Disk]
3nd Boot [USB Floppy]
4th Boot [USB CD/DVD]
5th Boot [USB Hard Disk]
6th Boot [USB KEY]
7th Boot [Network]
8th Boot [UEFI]
Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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- **Setup Prompt Timeout**
  Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

- **Boot NumLock State**
  Use this item to select the power-on state for The NumLock.

- **Quiet Boot**
  Enable or disable quiet boot option.

- **Boot Option Priorities**
  Set the system boot priority order.

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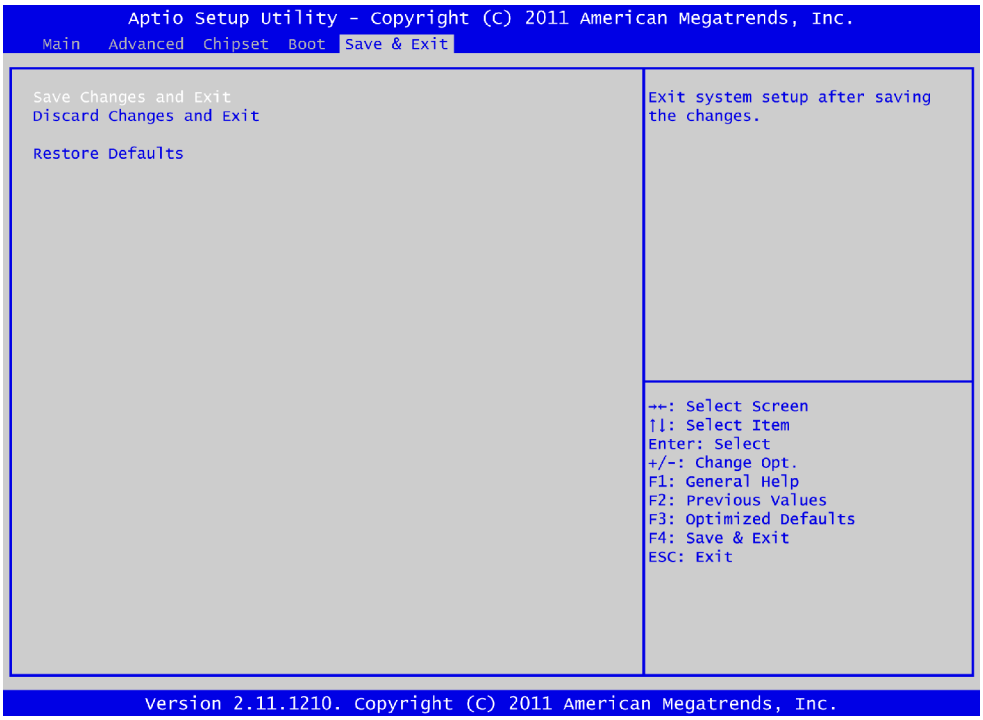
Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with default values.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Save Changes and Exit
Discard Changes and Exit
Restore Defaults
Exit system setup after saving the changes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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- **Save Changes and Exit**
  When you have completed the system configuration changes, select this option to leave the BIOS Menu.
  Select “Save Changes and Exit” and exit from the Save & Exit menu and press Enter. Select “Yes” to save changes and exit.

- **Discard Changes and Exit**
  Select this option to quit the BIOS Menu without making any permanent changes to the system configuration.
  Select “Discard Changes and Exit” and exit from the Save & Exit menu and press Enter. Select “Yes” to discard changes and exit.

- **Restore Defaults**
  Select this option to restore the system configuration to defaults.
  Select “Restore Defaults” and exit from the Save & Exit menu and press Enter. Select “Yes” to set defaults and exit.

DATA MODUL AG | Landsberger Str. 322 | 80687 Munich | Tel. +49-89-56017-0 | Fax +49-89-56017-119 | www.data-modul.com

DATA MODUL
DISPLAYS AND EMBEDDED SOLUTIONS

DATA MODUL Headquarters Munich
Landsberger Str. 322
D-80687 Munich - Germany
Phone: +49-89-56017-0
Fax: +49-89-56017-119
www.data-modul.com

Sales Office Hamburg
Borsteler Chaussee 51
D-22453 Hamburg - Germany
Phone: +49-40-42947377-0

Sales Office Duesseldorf
Fritz-Vomfelde-Str. 8
D-40547 Duesseldorf - Germany
Phone: +49-211-52709-0

Sales Office Scandinavia
Lundsmindevej 5
DK-6000 Kolding - Denmark
Phone: +45-75-224477

DATA MODUL FRANCE
7 rue Saint Christophe
F-60300 BARON - FRANCE
Phone: +33-3-44549699

DATA MODUL Italy, S.r.l.
Regus Center Senigallia
Via Senigallia 18/2
I-20161 Milano - Italy
Phone: +39-02-64672509

DATA MODUL Iberia, S.L.
c/ Adolfo Pérez Esquivel 3
Edificio Las Americas III Oficina 40
28230 Parque Empresarial
Las Rozas / Madrid - Spain
Phone: +34-916-366458

DATA MODUL Suisse GmbH
Stationsstr. 57
CH-8606 Nänikon - Switzerland
Phone: +41-44-94091-50

DATA MODUL Ltd. / UK
Collins Building
3 Vigo Place - Aldridge - Walsall
WS9 8UG - United Kingdom
Phone: +44-1922-457358

DATA MODUL Inc. / USA
275 Marcus Blvd, Unit K
Hauppauge, NY 11788 - USA
Phone: +1-631-951-0800